



Entrez PubMed Nucleotide Protein Genome Structure PRC Journals

Search PubMed

for

Go

Clear

Limits

Preview/Index

History

Clipboard

Details

About Entrez

Display

Abstract

Show: 20

Sort

Send to

Text

Text Version

Entrez PubMed  
Overview  
Help | FAQ  
Tutorial  
New/Noteworthy  
E-Utilities

PubMed Services  
Journals Database  
MeSH Database  
Single Citation Matcher  
Batch Citation Matcher  
Clinical Queries  
LinkOut  
Cubby

Related Resources  
Order Documents  
NLM Gateway  
TOXNET  
Consumer Health  
Clinical Alerts  
ClinicalTrials.gov  
PubMed Central

Privacy Policy

☐ 1: Biochemistry. 1995 Apr 4;34(13):4139-46.[Related Articles, Links](#)

## Structure of the brain-derived neurotrophic factor/neurotrophin 3 heterodimer.

Robinson RC, Radziejewski C, Stuart DI, Jones EY.

Laboratory of Molecular Biophysics, Oxford University, United Kingdom.

The development and sustenance of specific neuronal populations in the peripheral and central nervous systems are controlled through the binding of neurotrophic factors to high-affinity cell surface receptors. The neurotrophins (nerve growth factor, NGF; brain-derived neurotrophic factor, BDNF; neurotrophin 3, NT3; and neurotrophin 4, NT4) are dimeric molecules which share approximately 50% sequence identity. The crystal structure of the murine NGF homodimer [McDonald et al. (1991) Nature 354, 411-414] indicated that the dimer interface corresponds to regions of high sequence conservation throughout the neurotrophin family. This potential compatibility was duly exploited for the production in vitro of noncovalent heterodimers between the different neurotrophins [Radziejewski, C., & Robinson, R.C. (1993) Biochemistry 32, 13350-13356; Jungbluth et al. (1994) Eur. J. Biochem. 221, 677-685]. Here, we report the X-ray structure at 2.3 Å resolution of one such heterodimer, between human BDNF, and human NT3. The NGF, BDNF, and NT3 protomer share the same topology and are structurally equivalent in regions which contribute to the dimer interface in line with the propensity of the neurotrophins to form heterodimers. Analysis of the structure of regions of the BDNF/NT3 heterodimer involved in receptor specificity led us to conclude that heterodimer binding to p75 involves distant binding sites separately located on each protomer of the heterodimer. In contrast, heterodimer interactions with the trk receptors probably utilize hybrid binding sites comprised of residues contributed by both protomers in the heterodimer. The existence of such hybrid binding sites for the trk receptor provides an explanation for the lower activity of the BDNF/NT3 heterodimer in comparison to the homodimers.(ABSTRACT TRUNCATED AT 250 WORDS)

PMID: 7703225 [PubMed - indexed for MEDLINE]

Display

Abstract

Show: 20

Sort

Send to

Text

[Write to the Help Desk](#)[NCBI | NLM | NIH](#)[Department of Health & Human Services](#)[Freedom of Information Act | Disclaimer](#)

Nov 21 2003 06:56:4